

WHAT IS CLAIMED IS:

1. A method of separating compounds, the method comprising the steps of:

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- a. tagging at least a first organic compound with a first tagging moiety to result in a first tagged compound;
- b. tagging at least a second organic compound with a second tagging moiety different from the first tagging moiety to result in a second tagged compound; and
- 10 c. separating the first tagged compound from a mixture including at least the second tagged compound using a separation technique based upon differences between the first tagging moiety and the second tagging moiety, the separation
- 15 technique being based upon difference in fluorous nature of the first tagged compound and the second tagged compound, differences in total charge between the first tagged compound and the second tagged compound, differences in size between the
- 20 first tagged compound and the second tagged compound, or differences in polarity between the first tagged compound and the second tagged compound.

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The method of Claim 1 wherein the first and the second tagging moiety are oligomers, dimers that differ in size.

The method of Claim 6 wherein the first and the second tagged compound are separated on chromatography.

The method of Claim 1 wherein the first and the second tagging moiety differ in

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**Abstract.** We study the asymptotic behavior of the eigenvalues of the Dirac operator associated with a magnetic field on a Riemannian manifold. The magnetic field is assumed to be constant along the fibers of a principal circle bundle over a base manifold. The asymptotic expansion of the eigenvalues is derived, and it is shown that the leading term depends on the curvature of the base manifold and the magnetic field. The result is applied to the study of the spectral gap of the Dirac operator.

9. The method of Claim 8 wherein the first tagged compound and the second tagged compound are separated by standard or reverse phase chromatography.

10. The method of Claim 1 wherein the first tagging moiety and the second tagging moiety are selected so that the order in which the first tagged compound and the second tagged compound separate is predetermined.

11. A method of separating compounds, the method comprising the steps of:

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- a. tagging at least a first organic compound with a first fluorous tagging moiety to result in a first tagged compound;
  - b. tagging at least a second organic compound with a second fluorous tagging moiety different from the first tagging moiety to result in a second tagged compound; and
  - c. separating the first tagged compound from a mixture including the second tagged compound using a separation technique based upon differences in the fluorous nature of the first tagged compound and the second tagged compound.

12. The method of Claim 11 wherein the first fluorous tagging moiety and the second fluorous tagging moiety differ in fluorine content or structure.

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13. The method of Claim 12 wherein the first tagged compounds and the second tagged compounds are separated using fluorous reverse phase chromatography.

14. A method of separating compounds, the method comprising the steps of: tagging a plurality of organic compounds with a plurality of fluorous tagging moieties to result in a plurality of tagged compounds, each of the fluorous tagging moieties being different; and separating at least one of the plurality of tagged compounds from other tagged compounds with a different tag using a separation technique based upon differences in the fluorous nature of the tagged compounds.

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15. The method of Claim 14 wherein the first fluorous tagging moiety and the second fluorous tagging moiety differ in fluorine content or structure.

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16. The method of Claim 15 wherein the first tagged compounds and the second tagged compounds are separated using fluorous reverse phase chromatography.

17. A method for carrying out a chemical reaction, comprising the steps of: tagging a plurality of compounds with different tagging moieties to create tagged compounds, conducting at least one chemical reaction on the tagged compounds to produce a mixture of tagged products, and separating at least one of the tagged products from the mixture of tagged products by a method based upon differences in the tagging moieties.

18. The method of Claim 17 further including the step of removing the tagging moieties from the tagged products.

19. The method of Claim 17 wherein the tagging  
5 moieties are fluorous moieties that differ in fluorous nature.

20. The method of Claim 19 wherein the fluorous tagging moieties differ in fluorine content or structure.

21. The method of Claim 19 wherein the tagged  
10 products are separated by using fluorous reverse phase chromatography.

22. The method of Claim 17 wherein the tagging moieties differ in total charge.

23. The method of Claim 22 wherein the tagged  
15 products are separated by electrophoresis.

24. The method of Claim 17 wherein tagging moieties are oligomers, polymers, or dendrimers that differ in size.

25. The method of Claim 24 wherein the tagged  
20 products are separated by size exclusion chromatography.

26. The method of Claim 17 wherein the tagging moieties differ in polarity.

27. The method of Claim 26 wherein the tagged products are separated by standard or reverse phase chromatography.

28. The method of Claim 17 wherein all of the tagged compounds are reacted with the same starting compounds.

29. The method of Claim 17 wherein a first plurality of compounds is tagged with a first tagging moiety and mixed with other tagged compounds that are tagged with tagging moieties different from the first tagging moiety.

30. The method of Claim 29 wherein the separation of the tagged products provides mixtures of product compounds bearing the same initial tag.

31. The method of Claim 17 wherein the tagged compounds are reacted with a mixture of different starting compounds.

32. The method of Claim 17 wherein the tagged compounds are selectively tagged with different tagging moieties such that the tagged products separate into fractions of known identity as determined by the tagging moieties.

33. A method for carrying out a chemical reaction, comprising the steps of: tagging a plurality of compounds with different fluororous tagging moieties to create tagged compounds, conducting at least one chemical reaction

on the tagged compounds to produce a mixture of tagged products, and separating at least one of the tagged products from the mixture of tagged products by a method based upon differences in the fluorous nature of the tagging moieties.

5           34. The method of Claim 33 further including the step of removing the fluorous tagging moieties from the tagged products.

          35. The method of Claim 33 wherein the fluorous tagging moieties differ in fluorine content or structure.

10           36. The method of Claim 35 wherein the tagged products are separated using fluorous reverse phase chromatography.

15           37. The method of Claim 33 wherein a first plurality of compounds is tagged with a first tagging moiety and mixed with other tagged compounds that are tagged with tagging moieties different from the first tagging moiety.

          38. The method of Claim 33 wherein the separation of the tagged products provides mixtures of product compounds bearing the same initial tag.

20           39. The method of Claim 33 wherein the tagged compounds are reacted with a mixture of different starting compounds.

40. The method of Claim 33 wherein all of the tagged compounds are reacted with the same starting compounds.

41. The method of Claim 33 wherein a first plurality of compounds is tagged with a first fluorine tagging moiety and mixed with other tagged compounds that are tagged with fluorine tagging moieties different from the first tagging moiety.

42. The method of Claim 41 wherein the separation of the tagged products provides mixtures of product compounds bearing the same initial tag.

43. The method of Claim 33 wherein the tagged compounds are reacted with a mixture of different starting compounds.

44. The method of Claim 33 wherein the tagged compounds are selectively tagged with different tagging moieties such that the tagged products separate into fractions of known identity as determined by the tagging moieties.

45. A method of separating compounds, the method comprising the steps of:

- a. tagging a first organic compound with a first tagging moiety to result in a first tagged compound;

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# DECLARATION